

CLAIMS

What is claimed is:

1. A photolithographic method of patterning a first material layer disposed beneath a second material layer, the second material layer being of a thickness and having a first surface in contact with the first material layer and a second surface, the method comprising:
  - a. forming a first mask over the second surface of the second material layer, wherein the first mask leaves portions of the second surface exposed;
  - b. etching the second material layer in the exposed portions down to the first material layer;
  - c. focusing a photolithographic image on the second surface of the second material layer;
  - d. adjusting the focus of the photolithographic image by an offset equal to the thickness of the second material layer; and
  - e. forming a second mask over the first material layer.
2. The method of claim 1, wherein the first material layer is an insulator.
3. The method of claim 1, wherein the second material layer is a semiconductor layer.
4. The method of claim 1, wherein focusing the photolithographic image on the second surface of the second material layer takes place before forming the

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first mask.

5. The method of claim 1, further comprising etching the first material layer through the second mask.
6. The method of claim 5, wherein etching the first material layer exposes a third material layer.
7. The method of claim 6, wherein the etched first material layer forms a third mask, the method further comprising etching the third material layer through the third mask.
8. The method of claim 7, wherein etching the third material layer exposes a forth material layer.
9. The method of claim 1, wherein the second material layer comprises a plurality of sub-layers.
10. The method of claim 9, wherein at least one of the sub-layers comprises a semiconductor.
11. A photolithographic process sequence for manufacturing MEMS structures from a first material layer disposed over a second material layer, the sequence comprising:
  - a. forming a first mask over the second material layer, wherein the first mask leaves portions of the second material layer exposed;
  - b. etching through the second material layer in the exposed portions;
  - c. forming a second mask over the first material

layer through the exposed portions of the second material layer, wherein the second mask leaves portion of the first material layer exposed; and  
d. etching the exposed portion of the first material layer.

12. The process sequence of claim 11, wherein a third material layer is disposed between the first material layer and the third material layer, and wherein the second mask comprises portions of the third material layer.
13. The process sequence of claim 12, wherein the third material layer comprises silicon dioxide.
14. The process sequence of claim 13, wherein etching the exposed portions of the first material layer removes less than all of the exposed portion of the first material layer; wherein the portions exposed by the second mask form a raised pattern defined by recessed areas formed in the exposed portions.
15. The process sequence of claim 14, further comprising:
  - a. forming a third mask over a first portion of the raised pattern, leaving a second portion of the raised pattern and the recessed areas exposed; and
  - b. etching the second portion of the raised pattern and recessed areas of the first material layer to remove substantially all of the first material layer in the recessed areas, leaving the pattern.

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16. The process sequence of claim 11, wherein the first material layer comprises a semiconductor.

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